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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,270	02/02/2004	Steven A. Kunsman	E20000120	9598

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ABB Inc.
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EXAMINER

RODRIGUEZ, PAUL L

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/770,270

Applicant(s)

KUNSMAN ET AL.

Examiner

Paul L. Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

AD

DETAILED ACTION

1. Claims 1-13 are presented for examination.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not state that the person making the oath or declaration has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

Drawings

4. The drawings are objected to because figure 2 labels reference number 32 as "decision logic", the specification refers to as "decision logic". Corrected drawing sheets in compliance

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with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "32" has been used to designate both "decision logic" in figure 2 and "memory" in figure 2a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

Page 2 line 20 uses the acronym "HIF" without defining, the first use of an acronym should be defined to avoid any confusion.

Page 12 line 34 refers to "filtering 30", reference number 30 previously "detection decision"

Page 12 line 35 refers to "decision logic 30" previously "filtering" and "detection decision".

Page 13 lines 1-2 states, "As is shown in Fig. 2a, acquisition 28..." reference number 28 not in Fig. 2a.

Appropriate correction is required.

7. The examiner has provided a number of examples of the specification deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as examples of deficiencies and should make all the necessary corrections to eliminate the specification objections.

Claim Objections

8. Claims 1-3, 6, 11 and 13 are objected to because of the following informalities:

Claim 1 line 10 refers to "a high impedance fault", line 8 also recites this limitation, unclear if this is referring to the same limitation, if this is the same limitation then it should be referred to as "the" or "said" high impedance fault.

Claim 1 line 11 refers to “said independent outputs”, previously “each having an output” but no reference to “independent” outputs.

Claim 1 lines 12-13 recite, “said plurality of high fault detection means”, previously “a plurality of high impedance fault detection means”, reference to the same limitation should remain consistent.

Claim 2 contains awkward language, would be better as “wherein there are at least three of said plurality of...”

Claim 3 contains awkward language, would be better as “wherein there are at least three of said plurality of...”

Claim 6 lines 1-2 refers to “said plurality of independent individual...” previously “a plurality of individual high...”, reference should remain consistent.

Claim 11 lines 10-11 state, “said plurality of high fault detection means”, previously “a plurality of high impedance fault detection means”, reference to the same limitation should remain consistent.

Claim 13 line 5 refers to “said electrical power lines”, previously “electrical power distribution lines”, reference to the same limitation should remain consistent.

Claim 13 lines 9-10 state “said plurality of independent high...” previously just “a plurality of high...” reference to the same limitation should remain consistent.

Appropriate correction is required.

9. The examiner has provided a number of examples of the claim deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as

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examples of deficiencies and should make all the necessary corrections to eliminate the claim objections.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 4 and 6-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 3 recites the limitation "said associated" in line 4. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 4 recites the limitation "said associated" in line 6. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 6 recites the limitation "said electrical power line" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim. Limitation also recited in lines 9, 12 and 16.

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14. Claim 8 is rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter. Claim 8 line 5 recites "said one or more of said sensing device", previously only one sensing device. This limitation implies that there are one or more"

15. Claim 9 recites the limitation "said sensing device" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

17. Claims 1-5, 8, 9 and 11-13 rejected under 35 U.S.C. 102(b) as being anticipated by Russell (U.S. Pat 5,550,751). The claimed invention reads on Russell as follows:

Russell discloses (claim 1) a method for detecting high impedance faults in electrical power lines (col. 1 lines 6-10) comprising providing a plurality of high impedance fault detection means each having an output (col. 2 lines 10-17, col. 5 lines 4-9), independently detecting a high impedance fault condition in said electrical power lines using said plurality of high impedance fault detection means (col. 4 line 67 – col. 5 line 11) and determining presence of a high impedance fault using a decision means (col. 5 line 46 – col. 6 line 13), wherein said decision

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means determines a high impedance fault if any two or more of said independent outputs are indicative that an associated one of said plurality of high fault detection means has detected a high impedance fault condition (col. 5 lines 46-58, col. 7 line 4 – col. 8 line 4), (claim 2) said plurality of high impedance fault detection means are at least three (col. 5 lines 1-4), (claim 3) said plurality of high impedance fault detection means are at least three (col. 5 lines 1-4) and each provide a logical output having one state indicative that said associated one of said three detection means has detected a high impedance fault (col. 5 lines 37-45, col. 7 lines 4-10) and said decision means is a decision logic (col. 7 lines 4-63) and said method further comprises said decision means determining a high impedance fault if any two of said three logical outputs are in a state indicative of detecting a high impedance fault (col. 7 lines 35-63), (claim 4) said decision means a decision logic (col. 5 lines 37-45, col. 7 lines 4-10) and said method further comprises providing at least three high impedance fault detection means (reference number 104-110) having a logical output which in one state is indicative that said associated one of said three detection means has detected a high impedance fault (col. 7 lines 4-63) and said decision means determining a high impedance fault if at least two of said at least three logical outputs are in said state indicative of detecting a high impedance fault (col. 7 lines 35-63), (claim 5) a system for detecting high impedance faults (abstract, col. 2 lines 19-22, figure 1) in an electrical power system having an alternating current flowing therethrough (reference number 14) comprising an electrical power supply (col. 3 lines 4-6, reference number 14) one or more interconnected electrical power conductors (reference number 12, col. 3 lines 1-11) and a composite high impedance fault detection system connected to said one or more electrical power conductors (reference number 10, 100, figure 2) for detecting a high impedance fault when at least two of a plurality of individual high impedance fault detection systems each independently detect the

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occurrence of a high impedance fault on said electrical power conductors (col. 7 lines 4-63), (claim 8) further comprising a sensing device coupled to one or more of said one or more electrical power conductors for sensing current flow on said conductors (col. 3 lines 27-45) and a bandpass filter disposed between said one or more of said sensing device and said composite high impedance fault detection system (col. 3 lines 54-60), (claim 9) further comprising one or more processors that receives and processes data indicative of current flow on said one or more electrical power conductors from said sensing device (col. 3 lines 30-45, col. 4 lines 7-16) and logical outputs from each of said individual high impedance fault detection systems (col. 5 lines 37-45, col. 7 lines 4-10) and that determines a high impedance fault on said one or more electrical power conductors (col. 4 line 63 – col. 7 line 63) when any two of said individual high impedance fault detection systems each independently detect a high impedance fault (col. 4 line 67 – col. 5 line 11, col. 7 lines 4-63), (claim 11) an apparatus for detecting a high impedance fault in electrical power lines (figure 1, 2) comprising a plurality of high impedance fault detection means (reference number 104-110) each having an output (reference number 112-118), each of said plurality of high impedance fault detection means independently detecting a high impedance fault condition on said electrical power lines (col. 4 line 67 – col. 5 line 11, col. 7 lines 4-10) and a decision means for determining a high impedance fault if any two or more of said independent outputs are indicative that an associated one of said plurality of high fault detection means has detected a high impedance fault condition (col. 7 lines 4-63), (claim 12) a protective relay for electrical power distribution lines (col. 4 lines 25-30), comprising one or more computing devices (figure 1) only one of said computing devices used for detecting both non-high impedance faults and high impedance faults in said electrical power distribution lines (col. 3 lines 28-45, 60-67) and (claim 13) wherein said only one of said computing devices

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detects a high impedance fault in said electrical power distribution lines (figure 2) by independently detecting a high impedance fault condition in said electrical power lines using a plurality of high impedance fault detection means (reference number 104-110) and determines a presence of a high impedance fault using a decision means, wherein said decision means determines a high impedance fault if any two or more of said plurality of independent high impedance fault detection means have detected a high impedance fault condition (col. 4 line 62 – col. 8 line 4). Examiner would like to point out that any reference to specific figures, columns and lines should not be considered limiting in any way, the entire reference is considered to provide disclosure relating to the claimed invention.

18. Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Macbeth et al (U.S. Pub 2001/0036047). The claimed invention reads on Macbeth et al as follows:

Macbeth et al discloses a protective relay for electrical power distribution lines (figure 1, reference number 22, figure 6, paragraph 41), comprising one or more computing devices (reference number 14, paragraph 33, reference number 610 paragraph 41), only one of said computing devices used for detecting both non-high impedance faults and high impedance faults in said electrical power distribution lines (paragraph 3, 6, 7, 41-43).

19. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Tobin (U.S. Pat 6,718,271). The claimed invention reads on Tobin as follows:

Tobin discloses a protective relay for electrical power distribution lines (col. 13 line 65 – col. 14 line 24, col. 18 lines 32-60, reference number 10-12), comprising one or more computing devices (figure 10), only one of said computing devices used for detecting both non-high

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impedance faults and high impedance faults in said electrical power distribution lines (col. 1 lines 59-67, col. 2 lines 21-32, 53-62, col. 3 lines 20-30, col. 8 lines 51-64).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 6, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell (U.S. Pat 5,550,751) in view of Admitted Prior Art.

Russell teaches most all of the instant invention as applied to claims 1-5, 8, 9 and 11-13 above. Russell does not expressly teach wherein said plurality of independent individual high impedance fault detection systems further comprise a wavelet based system having a first logical output for detecting a high impedance fault condition in said electrical power line, a higher order

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statistics based system having a second logical output for detecting a high impedance fault condition in said electrical power line and a neural network based system having a third logical output for detecting a high impedance fault condition said electrical power line.

By applicants own admission, it was well known in the art to detect high impedance fault conditions using a wavelet based system (page 6 line 27 - page 7 line 6) a higher order statistics based system (page 4 lines 12-16, page 4 line 28 – page 5 line 10, page 6 lines 15-16) and a neural network based system (page 5 line 18-32, page 7 lines 7-23). Also the Examiner found additional teachings in the art to further support that the detection systems were well known in the art where (U.S. Pub 2003/0101008 to Hart uses a wavelet method, U.S. Pat 5,452,223 to Zuercher and U.S. Pat 6,453,248 to Hart et al use a statistical method and U.S. Pat 5,537,327 to Snow et al use a neural network method, each for determining a high impedance fault).

The Admissions and Russell are analogous art because they are all directed to determining high impedance faults.

At the time the invention was made it would have been obvious to one having ordinary skill in the art to utilize the various known techniques of the admitted prior art in the expert system of Russell because Russell teaches numerous advantages such as the expert detector improves performance in both security and dependability, the expert detector has the ability to accommodate new detection techniques as they are developed by experts in the art, the ability to integrate a variety of techniques provides a more reliable system than those using only a single detection technique and the ability of the expert detection system to integrate newly developed techniques with previous techniques provides a system capable of adapting to, and readily implementing, the latest developments in high impedance fault detection research (col. 15 lines 5-15).

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Therefore it would have been obvious to combine the admitted prior art high impedance fault detection techniques with Russell to obtain the invention as specified in claims 6, 7 and 10.


Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L. Rodriguez whose telephone number is (571) 272-3753.

The examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Paul L Rodriguez
Primary Examiner
Art Unit 2125

PLR
8/3/05